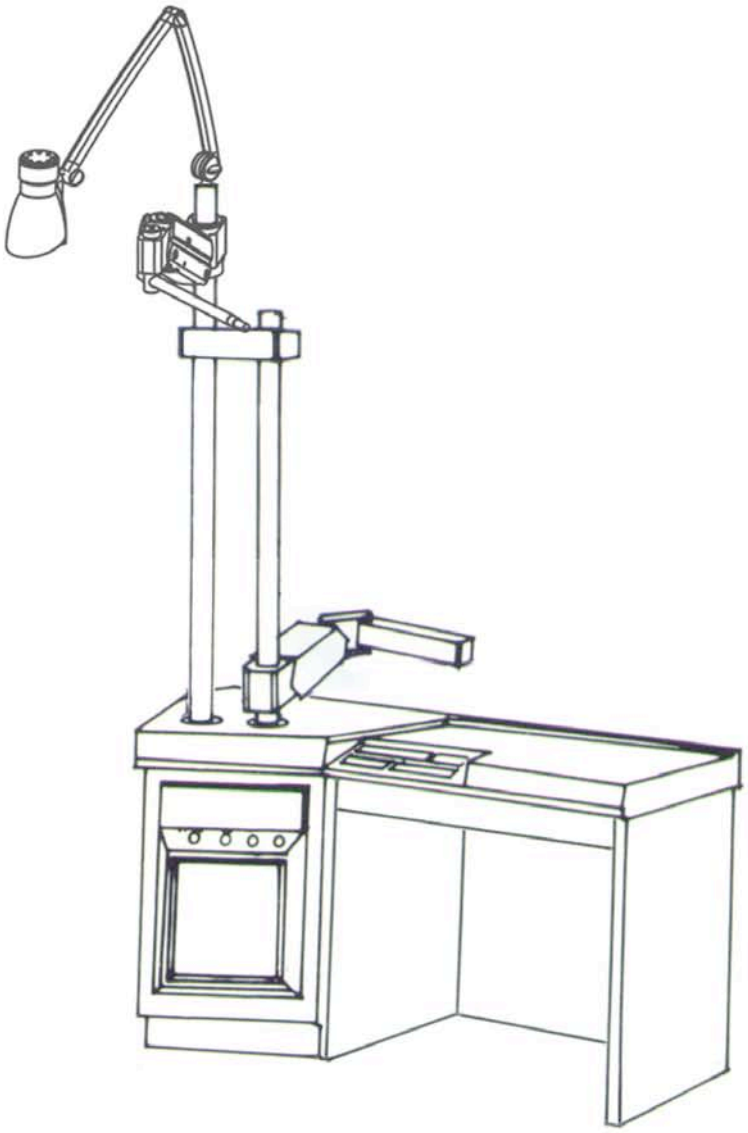
TOPCON OMNI SYSTEMS

USERS MANUAL



OMNI-IIDU MANUAL

INTRODUCTION

Thank you for purchasing the Omni 2 DU (Manual).

The Omni is a state-of-the-art system that provides the ultimate Ophthalmic and Optometric instrument delivery. The unit is intended to deliver the instruments between the operator and the patient in a fast and easy manner.

WARNING: The installation of Omni (all models) shall only be performed by a qualified technician.

WARNING: The Omni (all models) is designed for use with TOPCON equipment. If any other equipment is used, it shall meet the same certifications.

WARNING: All service and repairs shall be performed by a qualified technician.

WARNING: All replacement parts or optional equipment shall be genuine Topcon parts. Contact Topcon or your dealer for those items.

Please carefully read this user's manual to get the best system performance, and place the manual in a convenient location for future reference.

PRECAUTIONS

1. Installation. Never position the unit where it will be exposed to moisture, direct sunlight, dust, salty air, chemical storage areas, excessive temperature or humidity. Install the unit in a stable place, free of uneven floors, vibration and shock.

2. Prior to Operation. Always check that all the cords are properly connected.

3. Operation. Take the proper steps to stop the unit (leaving the patient in a safe condition) if anything is found wrong with the unit.

4. After Operation. Never hold and pull the connecting cord for disconnecting plugs. Excessive force may be applied and cause damage to the inside connections. If the unit has not been used for a long period of time, check the operation and safety features before using it again.

SAFETY CONCERNS

The Omni 2 DU (Manual) conforms to UL 2601-1, and CSA C22.2 No. 601.1-M90. Any of the defined optional equipment can be added to the Omni 2 DU (Manual) without any additional safety hazards being introduced and there is no disposal of any waste products associated with Omni 2 DU (Manual).

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CONTENTS

1.	**NOMENCLATURE**		**1**
	1.1	Omni 2 DU (Manual) Main Components	1
2.	**PERFORMANCE AND SPECIFICATIONS**		**2**
3.	**ASSEMBLY**		**4**
	3.1	Tools	4
	3.2	Omni System	4
	3.3	Attaching Instruments	8
	3.4	Computerized Linked System (optional)	9
	3.5	Power Up	10
4.	**SYSTEM OPERATION**		**11**
	4.1	Main Power Switch	11
	4.2	Overhead Lamp Switches	11
	4.3	Chair-Control Switch	11
	4.4	Auto-Return Switch (for chair)	11
	4.5	Auxiliary and Outlet Switches	11
	4.6	Indirect Dimmer Control	11
5.	**ADJUSTMENTS**		**12**
6.	**MAINTENANCE**		**14**
7.	**TROUBLESHOOTING**		**14**

1. NOMENCLATURE

1.1 Omni 2 DU (Manual) Main Components

Figure 1 shows the primary features and key components of the Omni 2 DU (Manual). Use the figure as a reference. Other components of the Omni 2 DU (Manual) are defined in their own manuals.

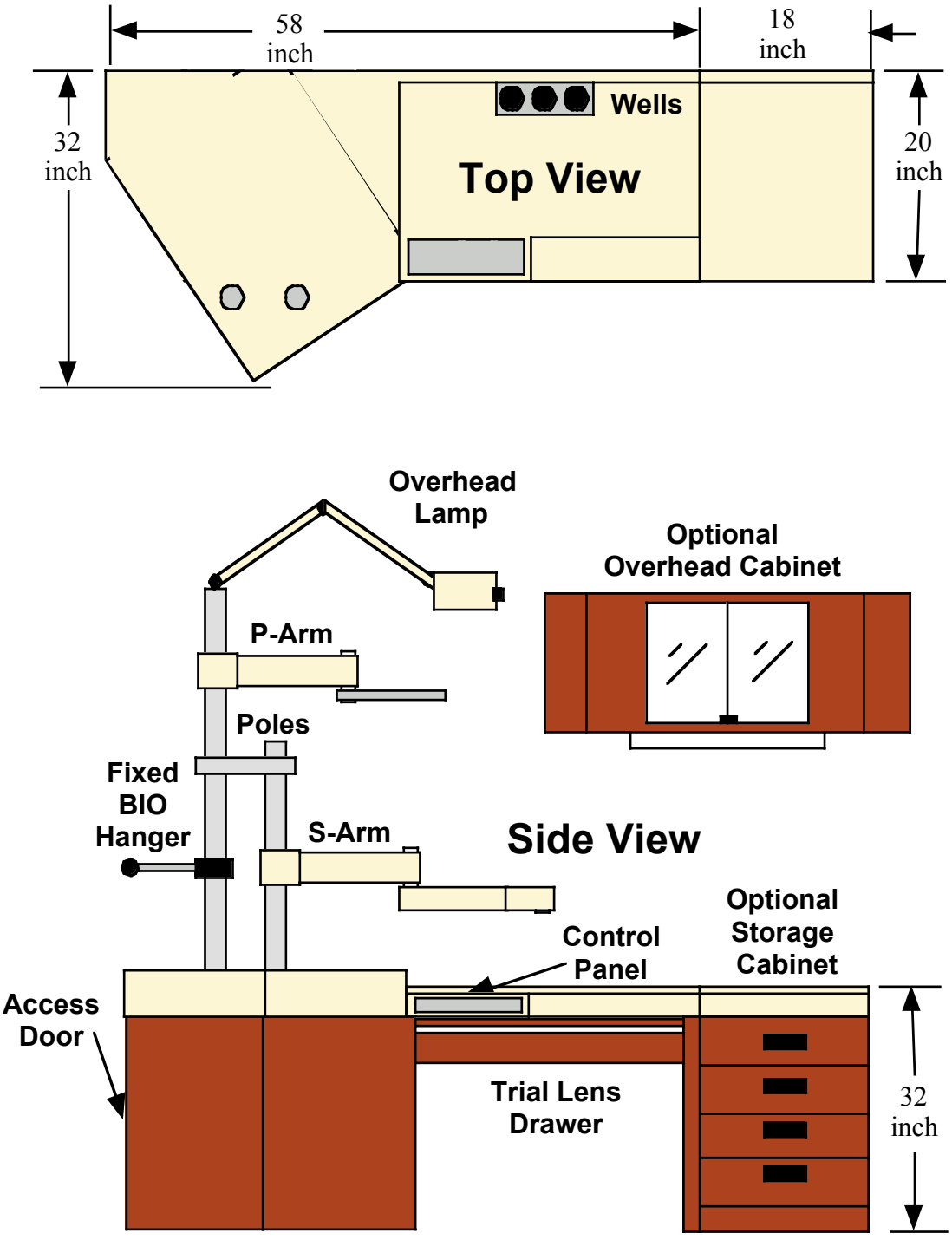


Figure 1: Omni 2 DU (Manual) (Right Hand View)

2. PERFORMANCE AND SPECIFICATIONS

Desk System

- Cabinet System Size: 32 in x 58 in x 32 in (813 mm x 1473 mm x 813 mm)
- Mode of Operation: Continuous Use
- Type of Protection: (Against Electrical Shock) Class 1 protection
- Ingress of Water Protection: Ordinary protection (IPX0)
- AP or APG: Not AP or APG equipment

Counterbalanced Refractor Arm

- Adjustable Load Range: 8 to 20 lbs. (3.6 to 9.0 kg)
- Vertical Adjustment Range: 12 inch (305 mm)

Counterbalanced Slit Lamp Arm

- Adjustable Load Range: 22 to 55 lbs. (10 to 25 kg)
- Vertical Adjustment Range: 11.5 inch (292 mm)

Counterbalanced Keratometer Arm (optional)

- Adjustable Load Range: 18 to 45 lbs. (8 to 20 kg)
- Vertical Adjustment Range: 11.5 inch (292 mm)

Electrical

- Voltage, Current, Frequency:
  - US Versions: 120 VAC (± 10%), 5 A, 60 Hz
  - Non-US Versions: 240 VAC (± 10%), 3 A, 50 Hz
- Rechargeable Instrument Wells
  - Battery Voltage: 3.5 v
  - Charge Rate: Trickle: 20 mA

Weight

- Net weight 350 lbs. (160 kg)

Environmental Operating Conditions

- Ambient Temperature Range: 50 to 104 Degrees F (10 to 40 Degrees C)
- Relative Humidity Range: 30 to 75%
- Atmospheric Pressure Range: 10.1 to 15.4 psi (700 to 1060 hPa)

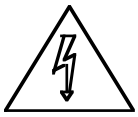
Environmental Storage/Transportation Conditions

- Ambient Temperature Range: -20 to 130 Degrees F (-23 to 54 Degrees C)
- Relative Humidity Range: 30 to 95%
- Atmospheric Pressure Range: 10.1 to 15.4 psi (700 to 1060 hPa)
- Acceptable Storage Time
  (in operating environment): 5 years
  (in extreme environment): 20 days

Symbols used on the Omni 2 DU (Manual)

Cabinet Mounted Symbols:

Protective Earth ground location


CAUTION: Electrical shock possibility

ATTENTION: Information provided in manual

Alternating Current Symbol

Shipping Box Mounted Symbols:

Temperature Range for Storage/Transportation

Humidity Range for Storage/Transportation

3. ASSEMBLY

3.1 Tools

Use the following tools to assemble the Omni 2 DU (Manual):

1. #2 Phillips screwdriver.
2. Hex wrench kit.
3. Level (not provided).

3.2 Omni System

3.2.1 Unpack the Omni 2 DU (Manual) and allow the unit to come to room temperature. The standard components of the Omni 2 DU (Manual) are as follows: desk cabinet, counter weights (3), counterbalanced refractor arm, counterbalanced slit lamp arm, poles, lamp, and accessory kit. Use Figure 1 to identify the main components for all assembly steps. Options are supplied as ordered and the available options are: keratometer arm, projection screens/mirrors, storage cabinets, sink cabinets, and overhead cabinets.

3.2.2 The desk cabinet must be moved into position first. Lift the cabinet (1 person required) by grasping the cabinet. Carefully move the instrument cabinet into the desired position by lifting and sliding. Once in position, remove the temporary lumber on the bottom side and discard.

WARNING: To prevent damage to the unit, do not lift the unit by the fiberglass tops.

3.2.3 Remove the access door screw using a #2 Phillips screwdriver. Slide the pole into the desk cabinet with the holes facing the backside. Make sure the pole fits completely into the two pole brackets in the desk cabinet. Slide the pole all the way down. Securely tighten the four (4) 3/8-16 inch set screws using a 3/16 Hex wrench.

3.2.4 Lift (1 person required) the (3) three counter weight blocks into the desk cabinet through the access door.

WARNING: To prevent damage to the unit, carefully lift and tilt the blocks through the access door. Do not scape laminate, cables , or electronics.

3.2.5 Level the desk cabinet in two directions by turning the four (4) cabinet glides in each corner of the cabinet. Use the pole as a guide.

3.2.6 If the Omni is next to a wall, slide the cabinet as tight against the wall as possible.

3.2.7 Lift the slit lamp arm or optional keratometer arm (1 person required) over the pole, and slide it down the pole to the height desired. See Figure 3.2 for the suggested optimum mounting location (two poles maybe present on some models). Securely tighten the set screws using a 3/16 Hex wrench to hold the arm in place. Feed the cord from the arm down through the pole (or the cabinet top hole) and plug into the slit lamp arm connector on the electrical receptacle panel. If an optional keratometer arm is used, connect the second cable to the keratometer arm connector on the electrical receptacle panel. See Figure 3.3 for the Omni connector mounting location.

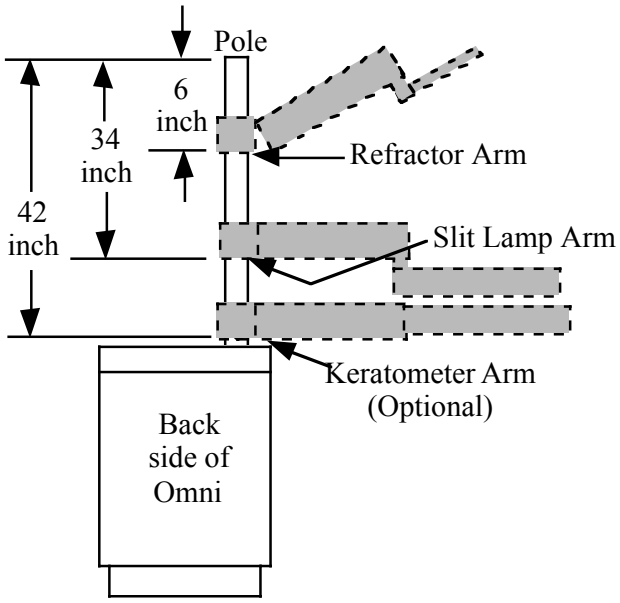


Figure 3.2: Generic instrument arm mounting locations
(Some models may have two poles)

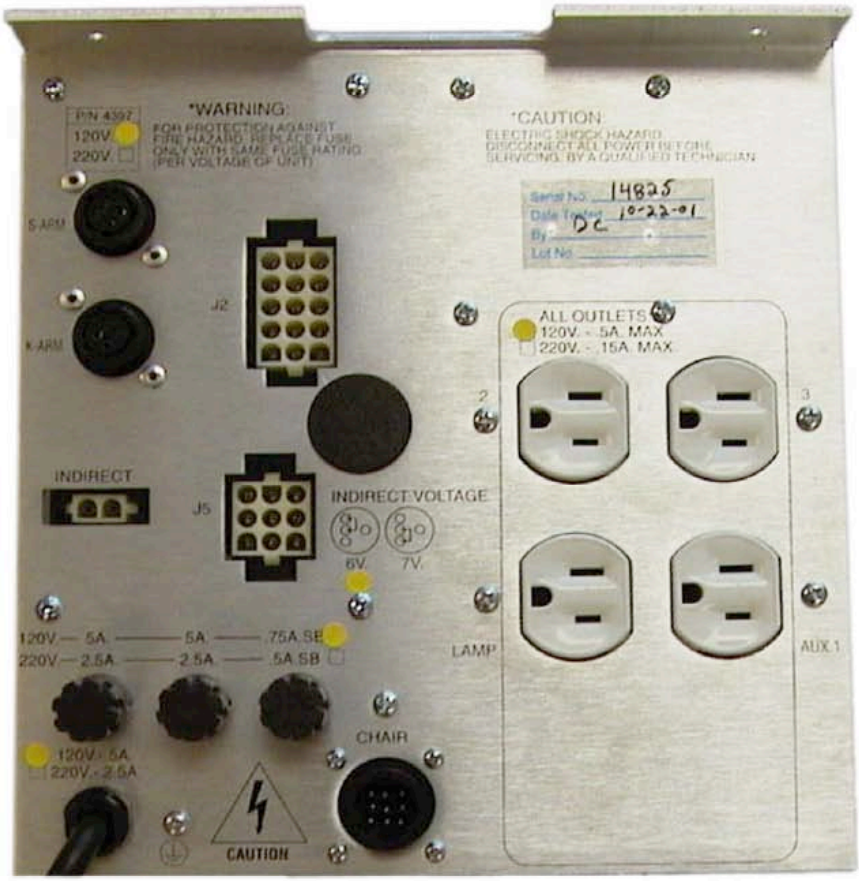


Figure 3.3: Omni 2 DU (Manual) Electronics

3.2.8 Lift the refractor arm (1 person required) over the pole, and slide it down the pole to the height desired. See Figure 3.2 for the suggested optimum mounting location. Securely tighten the set screws using a 3/16 Hex wrench to hold the refractor arm in place.

3.2.9 Optional. Attach the chart projector arm into position on the pole and secure in place.

3.2.10 Unpack the overhead lamp and install the 60 W bulb (provided). Slide the lamp cord down the pole, and plug the cord end into the outlet marked "Lamp". Connect the lamp to the lamp cord, then insert the lamp into the top of the pole. Push the excess cable down into the pole, while doing so. Tighten the screws securely using a 1/8" Hex wrench to secure the lamp in place.

WARNING: Do not use a higher wattage bulb.

3.2.11 Clamp the fixed indirect (BIO) hanger onto the pole. Secure the indirect hanger clamp by tightening the two screws with a 5/32 Hex wrench.

3.2.12 Place the chair cable through the large wire hole in the instrument cabinet, route the cable through the provided wire channel (under the access door), and mate into the 9-pin connector marked CHAIR on the bottom left corner of the electronics board. See Figure 3.3 for the Omni 2 DU (Manual) connector mounting location. Plug the power cord of the chair into a grounded wall outlet. (NOTE: Using a non-Topcon chair may require an adapter, see Table 1 for pin functionality. The chair supplies AC power to the Omni 2 DU (Manual), and the Omni 2 DU (Manual) acts as a switch and returns the power to the chair to make it go up and down.)

Pin	Function	Pin	Function
1	Earth Ground	6	Auto Return
2	AC Neutral	7	Relay Engaged
3	AC Hot	8	Safety Loop
4	Up (lift)	9	Safety Loop
5	Down (solenoid engaged)		

Table 1: Chair Connector Pins and Functions

3.2.13 Optional. Mount the overhead cabinet to the wall using the provided cleat (some models) or directly through the back cabinet wall. Securely anchor the cabinet to the using large screws into the wall structure (metal or wood stud). Plug in task light.

3.2.14 Optional. Plug in the X-ray viewer into the power strip under the table, and plug the power strip into either a wall outlet or the base electronics located in the instrument cabinet.

3.2.15 Optional. Verify that the sink drain and supply have been installed. Have the plumbing lines connected and tested for leaks.

WARNING: All plumbing connections shall be made by a qualified plumber, an shall be in accordance all federal, state, and local codes.

3.3 Attaching Instruments

The instruments that connect to the Omni 2 DU (Manual) must be mounted and configured properly before operation. The Omni 2 DU (Manual) was designed for Topcon instruments. Consequently, adjustments may be required for other brands of instruments and/or tools.

WARNING: All instruments that are attached to the Omni (all models) shall be UL 2601-1 and CSA C22.2 No. 601.1-M90 compatible.

3.3.1 Refractor

Mount the refractor onto the end of the refractor arm by removing the set screw in the end of the shaft, sliding on the refractor, tightening the locking clamp, and reinstalling the set screw through the refractor clamp into the shaft. This keeps the refractor from sliding off of the arm. Level the instrument in the exam position.

If a computerized vision tester is used, repeat the same process except feed the cable through the wire channel in the top of the arm extrusion then into the top hole in the Omni 2 DU (Manual) pole. Connect to the vision tester power supply, which must be located in the instrument cabinet.

3.3.2 Slit Lamp

Mount the Slit Lamp onto the end of the S-arm by placing the pivot pin (on the bottom of the tabletop) into the arm bushing. Lock the Slit Lamp on the arm by tightening the knob. Plug the cord from the arm into the transformer box. The S-arm is factory preset for a 35-40 lb. Slit lamp. Should a heavier slit lamp be used, the slit lamp arm may need to be re-adjusted to accommodate the heavier instrument. See section 5.4 in this manual for details. Level the instrument in the exam position.

3.3.3 Keratometer (optional)

Mount the Keratometer onto the end of the K-arm by placing the pivot pin (on the bottom of the tabletop) into the arm bushing. Lock the Keratometer on the arm by tightening the knob. Plug the cord from the arm into the transformer box. The K-arm is factory preset for an 18-22 lb. Keratometer. Should a heavier Keratometer be used, the Keratometer arm may need to be re-adjusted to accommodate the heavier instrument. See section 5.4 in this manual for details. The Topcon OMB-1 plug kit may be required to connect the instrument power cord to the power cord supplied with the arm. Level the instrument in the exam position.

3.3.4 Indirect (optional)

The indirect voltage is factory set at 6 volts, but is designed for an easy field change to 7.5 volts. To change the voltage, open the Omni 2 DU (Manual) side door in the instrument cabinet and change the jumper(s) on the circuit board to the configuration needed for the desired operating voltage. See Figure 3.3 for the jumper configurations and for their locations. Once set, plug the indirect into the twist-lock connector on the back side of the instrument cabinet. Hang the indirect headset onto the hanger.

3.3.5 Rechargeable Instrument Handles

The instrument console is supplied with three recharging wells for use with rechargeable instrument handles. Simply inserting them into the well charges the instruments. Green indicator lights are provided at each well to indicate that the instrument is in a charging condition. If the light is not lit, then the instrument is not charging. The wells are wired at the factory at 3.5 volts DC.

3.3.6 Chart Projector (optional)

The chart projector may be mounted on the wall or on the Omni 2 DU (Manual). If mounted on the Omni 2 DU (Manual), the chart projector arm supports any automatic chart projector. The arm has a .75 inch diameter socket for mounting a projector. The maximum extension of the arm with load, is 7 inches, and has a capacity of 22 lbs. (10 kg). Plug the chart projector into the auxiliary outlets (marked AUX 1 or AUX 2) on the Omni 2 DU (Manual).

3.4 Computerized Linked System (optional)

The computerized vision tester power supply is placed inside the instrument cabinet. Install the paper roll and top cover. Set the Dip switches to the proper positions based on the configuration of the system. See the vision tester user manual for the information. Plug the power cord into the outlets in the electrical assembly. Once set, turn the power supply power switch ON and place it on its end (larger end down) in the instrument cabinet with the connectors facing outward.

Mate the arm connector (routed previously into the instrument cabinet) to its mating vision tester power supply connector labeled ‘CV’.

Place the One-Dial Controller on the end of the table surface located on the storage cabinet. The instrument should be positioned facing the operator. Route the One-Dial Controller cable through the wire grommet, through the pole to the instrument cabinet, and then over to the power supply. Mate the connector to the vision tester power supply connector marked ‘KB’. Secure the extra cable slack out of the way of the other cables and moving parts.

Route the data cable from the Keratometer through the pole to the power supply. Mate the data cable connector to the vision tester power supply connector marked ‘COM1’.

Place the Mirror Chart on the storage cabinet. The Mirror Chart faces the patient. Route the small end of the power cord from the inside of the instrument cabinet, through the hole plugs in the storage cabinet, and into the instrument. Secure the cord under the storage cabinet. Plug the power cord into one of the two receptacles on the

inside of the instrument cabinet. Repeat the same routing for the data cable, and then mate the connector to the vision tester power supply connector marked 'COM4'.

Place the Computerized Lensmeter on the storage cabinet. The Computerized Lensmeter should face the operator. Route the small end of the power cord from the inside of the instrument cabinet, through the hole plugs in the storage cabinet, and into the instrument. Secure the cord under the storage cabinet. Plug the power cord into one of the two outlets on the inside of the instrument cabinet. Repeat the same routing for the data cable, and then mate the connector to the vision tester power supply connector marked 'COM2'.

3.5 Power Up

WARNING: Check all power cords and electrical connections for damage prior to powering up the system.

3.8.1 Plug in the power cord, and push the power button on the control panel. The green light in the switch will light when powered. Check the functionality of all the moving assemblies. Refer to the operation section of this document for the details.

3.8.2 Turn ON all the components. Check the functionality of all the components. Refer to the user manuals for each individual instrument for operation details. Move the refractor arm and slit lamp to the exam position. Level the vision tester and slit lamp table/arm.

3.8.3 Once satisfied with the connections of all the instruments, close the access door of the Omni 2 DU (Manual). Attach the access door with one (1) Phillip screw. Tighten the screws securely. See the next section, SYSTEM OPERATION, for details using the system.

4. SYSTEM OPERATION

The Omni 2 DU (Manual) is intended to be a system to be configured to meet the needs of all Ophthalmic and Optometric practices. The Omni 2 DU (Manual) is well suited for manual and automated equipment, including fully computerized systems.

Each of the Omni 2 DU (Manual) control buttons performs specific operations, and those operations and other significant functions are identified in the following paragraphs.

4.1 Main Power Switch

This illuminated rocker switch supplies power to all instruments. Turn the switch on before placing any instrument into use. (Turn the switch off when the unit is not used for extended period of time or at the end of the working day.) Green illumination indicates that the unit is "ON" and supplying power.

4.2 Overhead Lamp Switches

The lamp dimmer dial switches power on and off and dims the overhead lamp. Turning the dimmer dial clockwise switches the lamp ON and will increase the lamp brightness. Turning the dimmer dial counter-clockwise will decrease brightness and switches the lamp off.

4.3 Chair-Control Switch

The black rocker switch controls chair elevation. By pressing and holding the UP switch, the chair will raise until you release the button or it reaches its maximum height. Press and hold the DOWN switch, chair will lower until you release the button or it reaches its minimum height.

4.4 Auto-Return Switch (for chair)

When depressed, the green AUTO-RETURN button will automatically return the chair to its lowest position. Note-if the chair is a full power chair such as the OC-2300 or OC-2400, the auto-return function will only return the chair to it's lowest position.

4.5 Auxiliary and Outlet Switches

The auxiliary on/off switches (1 and/or 2 for Auxiliary #1 and #2) control power to the auxiliary outlets on the electrical receptacle panel located inside the Omni 2 DU (Manual). One is primarily intended for the chart projector, and the other is for optional equipment.

4.6 Indirect Dimmer Control

The indirect rocker switch switches the power for the indirect ophthalmoscope. The dimmer dial varies the brightness of the indirect bulb. Turn the dial clockwise to increase the intensity, counter-clockwise to decrease intensity.

5. ADJUSTMENTS

The refractor arm, slit lamp arm and/or optional dual fixed arm may require adjustment depending upon the weight of the instrument in use. If problems arise, please refer to Section 7: TROUBLE SHOOTING.

5.1 Refractor Arm

5.1.1 Counterbalance Adjustment

To adjust the counterbalancing of the instrument arm, (refer to Figure 5) remove the black plastic panel located at the instrument end of the arm by unscrewing the two (2) round-head Hex screws, then lock the instrument arm at its maximum elevated position.

Inside the arm you will see a castellated (slotted) nut. To adjust the refractor arm, insert the end of a 5/32 Hex wrench into the castellated (slotted) part of the nut. It can be turned to increase or decrease the counterbalance spring tension. (NOTE: Follow the same method for adjusting the counterbalanced slit lamp arm, but using a 3/16 Hex wrench instead.)

Turning the nut clockwise, as viewed from the instrument end of the arm, increases the counterbalance force. Counterclockwise rotation loosens the counterbalance force.

5.1.2 Brake Adjustment

At the instrument end of the arm, there is a handle operating the brake. This handle locks the three arm functions simultaneously: the instrument end of the arm, the pole end of the arm, and the counterbalance mechanism. Each of these three brakes can be adjusted independently of the others.

At the instrument and pole ends of the arm are two (2) Hex set screws. The small set screw adjusts the brake force. To adjust the brake, lock the handle and turn the screw 1/4 turn. Clockwise rotation increases the braking force and counterclockwise rotation decreases the braking force.

5.1.3 Counterbalance Brake Adjustment

In instances where the handle is not restraining vertical movement, the counterbalance brake will need to be adjusted. The counterbalance brake adjustment is located on the diagonal arm (refer to Figure 5). The arm will have three (3) black screws with caps on one end and a small opening underneath the middle black screw.

Lower or raise the arm slowly until the small Hex screw is aligned to the opening. Once the Hex screw has been aligned, tighten the handle and turn the screw clockwise approximately 1/4 turn. Please note, when activating the handle, place your thumb between the handle and the inner wall when tightening the small Hex screw. Fully activate the handle and press down on the auxiliary arm. If the resistance is inadequate, repeat the above procedure and turn the small Hex screw another 1/4 turn.

5.1.4 Drift Elimination

Occasionally, the arms tend to drift. Increasing the drag on the arm can eliminate a slight drift. Drag is adjusted by turning the larger of the two (2) set screws located at both ends of the arm. If drifting persists, use a level and check that the stand pole is vertical. Only a small amount of vertical offset can cause major drift problems.

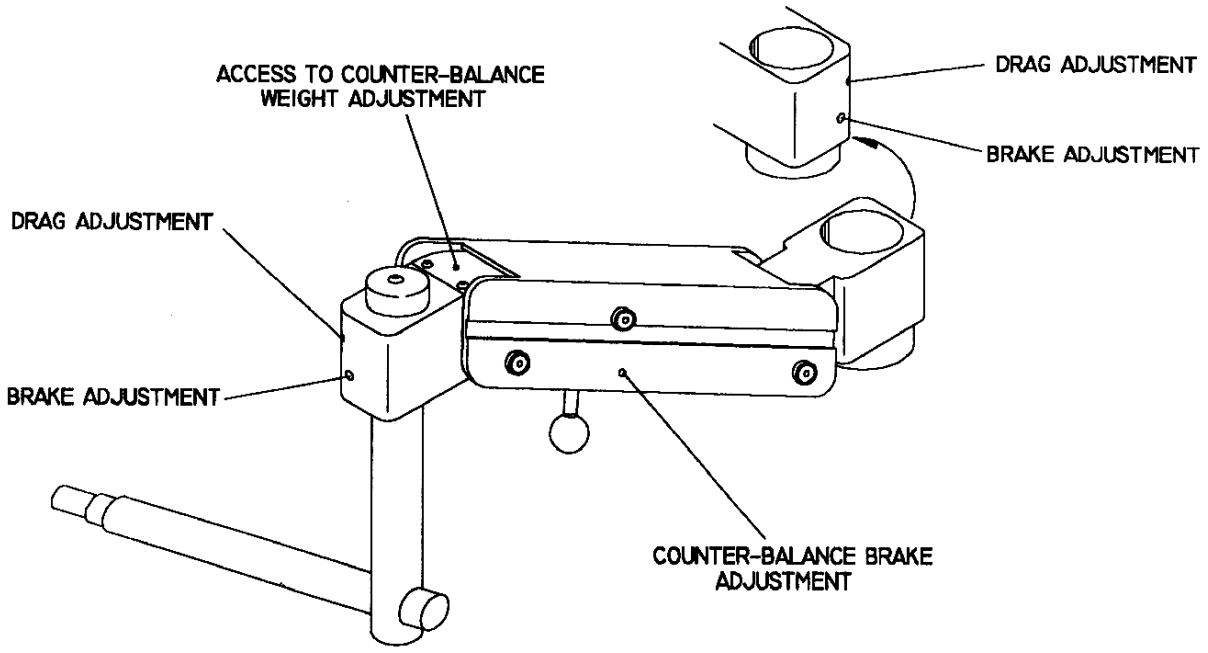


Figure 5: Counterbalanced Arm Adjustments

5.2 Slit Lamp Arm

5.2.1 Counterbalance Adjustment
Adjustment is the same as Section 5.1.1.

5.2.2 Brake Adjustment
Adjustment is the same as Section 5.1.2.

5.2.3 Counterbalance Brake Adjustment
Adjustment is the same as Section 5.1.3.

5.2.4 Drift Elimination
Adjustment is the same as Section 5.1.4.

5.3 Instruments

The instruments may require periodic adjustments and calibrations. Refer to the instrument manuals for those particular instruments for that information.

6. MAINTENANCE

WARNING: All service and repairs shall be performed by a qualified technician.

There are no periodic maintenance requirements for the Omni 2 DU (Manual). However, periodic checks of all the functions, safety switches, and power cords should be performed every six months. For operational detail, please refer to Section 4: SYSTEM OPERATION. If problems arise, please refer to Section 7: TROUBLE SHOOTING.

It is recommended that the exterior surfaces of the Omni 2 DU (Manual) be cleaned with a mild soap, water, and clean damp cloth to maintain a like-new appearance. Cleaning shall be performed at least every six months.

7. TROUBLE SHOOTING

WARNING: All service and repairs shall be performed by a qualified technician.

If the Omni (all models) does not function properly, check the following points before asking for assistance. Disconnect the main plug before any servicing is performed.

1) Read this User Manual to verify the Omni functions. Full part descriptions and diagnostic information is provided in the Service Manual (only dealers have copies).

2) Check to see that all cords and/or cables are securely connected, and that the power light comes on when the power button is pressed.

3) Replace any blown fuses. See below.

   a) First turn the power switch off and remove the power cable plug from the wall outlet.

   b) Turn the center part of the fuse holder counterclockwise, and the holder comes out.

   c) Replace the blown fuse with a new one (refer to Table 2). Push in and turn the fuse holder to tighten.

Location	Fuse	120 Volt	240 Volt
Base Chassis	Primary	5A 250 v	2.5 A 250 v
Base Chassis	Secondary	5A 250 v	2.5 A 250 v
Base Chassis	Low voltage	0.75A 250 v	0.5 A 250 v

Table 2: Fuse Information

4) Replace Lamp Bulb.
If the lamp does not light, check to assure that all switches are turned ON. If the lamp still does not light, then replace the bulb with a bulb of bulb of 60 watts (or less.

WARNING: Do not use a higher wattage bulb.

WARNING: All replacement parts or optional equipment shall be genuine Topcon parts. Contact Topcon or your dealer for those items.

5) Check the diagnostic instruments at a wall outlet to verify proper function.

6) If problems persist, contact your Topcon dealer or Topcon Medical Systems directly.

Topcon Medical Systems
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www.topconmedical.com